ABSTRACT

A code division multiple access user equipment receives K data signals over a shared spectrum. The user equipment receives and samples a combined signal having the K transmitted data signals. A combined channel response matrix is produced. A block column of a cross correlation matrix is determined using the combined channel response matrix. Each block entry of the block column is a K by K matrix. Each block entry of the block column is a K by K matrix. A fourier transform of a complex conjugate transpose of the combined channel response matrix multiplied to the combined signal samples is taken. An inverse of a fourier transform of each block entry is multiplied to a result of the fourier transform to produce a fourier transform of the data vector. An inverse fourier transform of the data vector fourier transform is taken to produce data of the K signals.